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ABSTRACT

A study examined the relationship between reading instruction method, sex of learner, word learning proficiency and reading achievement in the first grade. Subjects were 78 males and 88 females chosen from two white, middle class suburban schools, one having a sight vocabulary instruction program, the other a phonic basal program. Students were classified by the Word Learning Tasks (WLT) proficiency test at the beginning of first grade and tested for reading achievement at the end of first grade. ANOVA and MANOVA analyses revealed significant effects for WLT proficiency, program of instruction, and gender. The high phonic-high sight (HPHS) proficiency group scored highest on all measures of reading, the low phonic-low sight (LPLS) group lowest, and those with mixed proficiencies scored between the two extreme groups. As expected, girls demonstrated greater achievement than boys, regardless of program or WLT proficiencies. HPHS readers in the sight program had the highest mean scores; in all other instances the phonic program produced higher reading achievement scores on all subtests for readers of all WLT proficiency levels. The results suggest that (1) phonics instruction is beneficial regardless of learner WLT proficiencies; (2) as expected, students entering a new task with high levels of task-specific readiness will demonstrate greatest achievement; (3) a high proficiency in either word learning task contributes in some way to successful performance in beginning reading regardless of program of instruction. (JG)

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The Efficacy of Whole Word and Phonic Approaches To Beginning Reading Instruction with Readers Of Varying Word Learning Proficiencies

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ABSTRACT

This study investigates the relation between method of first grade reading instruction, WLT proficiency, and sex of learner and first grade reading achievement. The 166 subjects were selected on the basis of the methods and materials used for beginning reading instruction; half the subjects were in a basal program emphasizing sight vocabulary (or whole-word) instructiona nd half were in a phonic basal program. The two groups of students did not differ significantly in social class, race, mean WISC-R IQ, mean PPVT Listening Vocabulary or Total Score on the WLT. On the basis of their scores on the Phonic and Sight Word learning tasks of the WLT, administered at the beginning of first grade, Ss were classified into one of four groups: high phonic-high sight, high phonic-low sight, low phonic-high sight, or low phonic-low sight. Reading achievement was assessed at the end of first grade with two standardized reading achievement tests. ANOVA and MANOVA analyses revealed significant effects in regard to WLT proficiency, program of instruction, and gender. The high phonic-high sight group scored highest on all measures of reading; the low phonic-low sight group lowest; and those with one high and one low scored between the extremes. One program by WLT proficiency interaction was detected. This was due to differing results for the highest achievement groups on the comprehension subtest. Advantage for readers taught by a method that suited their WLT proficiency was not observed.

The Efficacy of Whole Word and Phonic Approaches
To Beginning Reading Instruction With Readers
Of Varying Word Learning Proficiencies

This study is concerned with the relative effects of whole word and phonic approaches to beginning reading instruction with first grade readers of varying word learning proficiencies. Word learning proficiencies describe a prereader's success in learning new words by both a whole word and phonic approach. This study is unique in that the determination of word learning proficiencies was based on tasks representative of the methods employed by the two instructional programs, rather than by traditional tests of reading readiness. This task-specific procedure was applied in place of readiness tests in an attempt to avoid the limitations associated with such tests and noted in previous research.

Background of the Study

In a review of the research focusing on the efficacy of alternative approaches to beginning reading, Barr (1984) concludes that the identification of one superior approach to instruction is inappropriate. Rather, research evidence confirms that for beginning readers, general reading skill may be achieved successfully through a variety of alternative methods of instruction. These include a wide range of programs representing diverse philosophies and procedures, i.e. language experience, whole word, phonic, linguistic, etc.

These conclusions suggest that successful acquisition of reading skill would be anticipated for children instructed in either a whole word or a phonic program, approaches studied in the present investigation. An additional concern, however, focuses on the degree of reading success

experienced by all children within these programs. For even though alternative programs produce successful readers, they concomitantly produce less successful readers (Wilson, 1981).

One result of the occurrence of disparate achievement among students in beginning reading has been research of program effectiveness in relation to learner aptitudes. This research focuses on aptitude-treatment interactions to discern whether one program is better than another for readers of varying abilities or prereading skill proficiencies (Barr, 1984). The identification of potentially effective programs with readers of varying abilities is of interest in designing effective programs for both beginning and remedial readers.

In reviewing research evidence of aptitude-treatment interactions (ATI), Barr concludes that findings "support the existence of ATI effects, particularly when aptitude is treated in general terms" (Barr, 1984, p. 555), i.e. as intelligence and/or as global measures of reading readiness.

On the other hand, when investigations address more specific learner attributes, significant ATI effects have not been detected (Barr, 1984). This has been observed in numerous studies of learner's modality strengths (visual and auditory) in relation to instructional approaches (usually whole word and phonic) (Bateman, 1968, Miller, 1979, Robinson, 1972). Both Bateman and Robinson found that children with an auditory modality superiority performed higher in both approaches.

A concern noted by Robinson (1972) was inadequate tests of modality strengths. To improve research investigation of possible ATI effects, she called for the application of more valid and sensitive instruments. Although the present study does not focus directly on modalities, the application of a more sensitive procedure to assess prereading proficiencies was attempted. The development of appropriate and valid

techniques to assess learner skill is dependent on a clear definition of the construct to be evaluated. In that this study is concerned with delineation of specific prereading abilities, consideration of current perspectives of both reading readiness and readiness assessment provide direction.

An appropriate definition of reading readiness focuses on attributes of the learner in relation to the demands of the learning task (Durkin, 1987). This suggests that both prerequisite skills/abilities and outcomes of instruction are context- or task-specific, a definition in opposition to the previous notion that readiness for reading was based on general cognitive characteristics (Mason, 1984). It follows that the best preparation for reading and the best assessment techniques must also be task-specific.

In discussing alternative readiness assessment techniques, Johnston (1984) recommends procedures congruent with this perspective of readiness. Specifically, he suggests that assessment measures be based on analysis of the specific learning tasks. Such measures have the advantage of high construct validity. The current study uses a task-specific measure based on an analysis of the specific tasks involved in beginning reading instruction via both whole word and phonic methods to delineate one level of prereading skill. This reflects current definitions of readiness and an appropriate approach to assessment.

Problem

The present study investigates the relationship between method of first grade reading instruction, sex of the learner, word learning proficiency and first grade reading achievement. Of particular interest is the relation of word learning proficiency to method of instruction.

Method

Subjects

This study involved a population of prereading students entering first grade classes in two suburban elementary schools. These children had been placed in regular reading programs on the basis of the two school's screening processes and were considered to have appropriate readiness skills for beginning reading. None of the children had been exposed previously to formal reading instruction.

Prior to the initiation of the study, the children were further tested to locate and exclude any subjects who were already reading at the start of first grade. This resulted in identification of a total of 166 nonreading subjects, 78 males and 88 females.

The two schools were selected on the basis of the methods and materials used for reading instruction. School 1 utilized a visual or sight method of beginning reading instruction; School 2 introduced reading via a sound-symbol or phonic approach. In all, 100 children from School 1 and 66 from School 2 participated in this study.

These schools were located in two different districts. The populations of the two were similar in socioeconomic status, both being white, middle class communities. To further describe the two groups of children, the mean I.Q. of each child was determined by administration of either the Weschler Intelligence Scale for Children - Revised, WISC-R, (Weschler, 1974) or the Peabody Picture Vocabulary Test, PPVT, (Dunn, 1959). The mean IQ of children in School 1, who were administered the WISC-R. was 105 and the mean IQ of children in School 2, administered the PPVT, was 104. Although tested on different measures, the results suggest

that subjects participating in this study were of average intelligence and the two school samples were comparable in regard to verbal ability and reading potential.

Independent Variables

The independent variables of this study were word learning proficiency, having four levels, sex of the learner with two levels, and instructional program with two levels.

Word Learning Task. Word learning proficiency for each subject was determined by administration of the Word Learning Tasks (WLT), standardized procedures developed to measure a beginning reader's ability to learn and retain words taught by two distinct methods, whole word and phonic (Barr, 1971, Kibby, 1975). These methods are consistent with teaching procedures found in beginning reading programs and the sets of words represent the typical vocabulary of preprimers. Previous research has established that the WLTs are reliable (.929) and valid predictors of first grade reading achievement (.6 to .72) (Barr, 1971, Kibby, 1975). Detailed discussion of the development of the specific teaching scripts, the selection of words, and the standardization of the tasks are described in Barr (1971) and Kibby (1975).

Briefly, the WLTs consist of two parts: The presentation of six words taught by a standardized sight teaching method emphasizing the visual characteristics of the words; and the presentation of six words taught by a standardized phonic method emphasizing the phonic or sound characteristics of the words. The specific steps in teaching by the sight word and phonic methods are summarized by Kibby (1979, p. 155-156) as follows:

The sight method entailed:

1. Associating the word with the child's personal experience using both pictures and discussion.
2. Reading the word in the context of a written sentence.
3. Comparing and contrasting the visual forms of words to note similarities and differences.
4. Identifying specific visual aspects of words to aid memory, such as shape, length, configuration, and specific beginning or final letters.

The six words taught by the sight method were boy, children, farm, house, rabbit, and wagon.

The phonic approach included the following instructional procedures:

1. Learning to discriminate letter sounds (in this case initial sounds).
2. Recognizing rhyming sounds (in this case final sounds).
3. Establishing phoneme-grapheme relations.
4. Blending of letter and word structures into words by a consonant substitution method.

The six words taught by the phonic method were: at, bat, hat, mat, rat, and sat.

Instructional Programs. Students in School 1 were placed in the Houghton Mifflin Readers (Houghton Mifflin). This basal series was considered a meaning-emphasis approach to reading and introduced beginning reading vocabulary by a whole word methodology. Initial objectives stressed the acquisition of a core of basic sight words which occurred immediately in the sentences and stories of the readers. The specific method for teaching new words entailed presenting the whole word in a meaningful context, clarifying meaning when necessary, and focusing on

visual characteristics of the word. Comprehension instruction was established by application of the directed reading activities with stories at the earliest levels. Phonics instruction occurred subsequent to the establishment of a basic sight vocabulary. As phonic generalizations were introduced, key words from the previously taught vocabulary were used to illustrate the principle. This phonics instruction was considered implicit.

First grade children in School 2 received reading instruction in the Keys to Reading Program (Economy Company). This basal program represented a code-emphasis approach to beginning reading. Initial objectives of this series stressed both acquisition of grapheme-phoneme relationships, established through explicit phonics instruction, and blending sounds to form words. This was the basic means of acquiring a reading vocabulary. When reading stories, reader's attention was focused on accurate decoding and accurate oral reading. Stress on comprehension, addressed through discussion and questioning, did not receive emphasis until readers had acquired a sophisticated grasp of word decoding content.

Dependent Variables

Three achievement measures of reading skill were the dependent variables.

Reading Achievement Measures. Reading achievement was assessed at the end of first grade by the administration of two standardized achievement tests yielding three measures of reading ability, the dependent variables. The Gates-MacGinitie Reading Test, Level A, Form 1 (Gates and MacGinitie, 1965) consisted of two subtests, Vocabulary and Comprehension. Reading skills assessed on the Gates include word recognition, word meaning, and picture cues on the Vocabulary subtest, and silent contextual reading and understanding on the Comprehension subtest.

The second instrument was the Reading Subtest of the Wide Range Achievement Test (Jastak and Jastak, 1965). This is an individually administered test of the pronunciation of words in isolation. Considered collectively, the three tests measure a wide variety of reading skills: Word recognition, vocabulary meaning, sentence and paragraph meaning, and the use of picture cues.

Procedures

The Word Learning Tasks were presented by trained instructors during the second and third weeks of school in September. The instructors were graduate reading clinicians prepared in the standardized teaching and testing procedures of the WLTs. Each child received instruction in the tasks in groups of three which met with the instructor during three consecutive days. This allowed for instruction in the two alternative tasks (whole word and phonic) on separate days with additional time for follow-up tests of retention. Sessions were specifically planned to include 12 minutes of instructional time followed by review and testing. The words were tested in a counterbalanced order.

Each word learning task included 12 measures of learning and retention. A student's results on all trials were used to formulate his total score for each set of words. Mean scores on both tasks were calculated for the group. Examination of these mean scores established that the groups were of similar proficiency in word learning at the initiation of the study (Table 1).

Since norms were not available for the WLTs, the mean scores were used to distinguish high from low proficiency on both whole word (sight) and phonic learning tasks. Scoring at or above the mean resulted in a classification of high; scoring below the mean resulted in a

classification of low. Each child was classified on the basis of his performance on the two tasks. This resulted in the identification of readers within both the sight (Houghton Mifflin) and phonic (Economy) programs of the following levels of WLT proficiencies: High Sight-High Phonic (HSHP), High Sight-Low Phonic (HSLP), Low Sight-High Phonic (LSHP), and Low Sight-Low Phonic (LSLP). The distribution is displayed in Table 2.

The reading achievement measures were administered to the children during May by trained graduate reading clinicians. These tests were used and scored according to the established, standardized procedures.

Each subtest resulted in a raw score which may be converted to standard scores and grade equivalencies by consulting the norms provided. For the purposes of this analysis, all scores were dealt with in raw score point units.

Analysis and Findings

In order to evaluate the questions addressed by this study, a three-way multivariate analysis of variance was applied. As this was an unequal analysis of variance, reordering to test main effects was completed. Also, having found significant effects in the initial analysis, the program was rerun to examine specific contrasts among means. The observed cell means and standard deviations of the three measures are presented in Table 3 and observed combined means are displayed in Table 4. Tests of significance are found in Table 5.

The analysis revealed a significant program effect (Multivariate F (3,148) = 21.14, $p<.01$). Reading achievement for students receiving instruction by the phonic method was significantly higher than that of students in the sight program. The univariate F statistics indicated that the significant difference between the two treatment groups was specific

to higher achievement by the phonic group subjects on both the Gates Vocabulary and WRAT subtests. The effect was largest for the WRAT subtest. Significant differences were not found between the treatment groups on the Gates Comprehension subtest.

Analysis also revealed a significant gender effect. Examination of the univariate results confirmed that regardless of program or word learning proficiency, female subjects outperformed males on all measures of reading achievement.

There was a significant effect of WLT proficiency on reading achievement (Multivariate F (9,360)=11.84, p,<01). Examination of the univariate analysis indicated that readers of HSHP proficiencies significantly outperformed all other students on the three measures of reading achievement. In contrast, those readers of LSLP proficiencies obtained significantly lower scores than all other proficiency levels on the three subtests of reading skill.

Those children with mixed levels of WLT proficiencies, HSLP and LSHP, demonstrated a level of reading achievement between the two extreme groups. They scored significantly lower than the HSHP group and significantly higher than the LSLP readers on the three reading measures. Planned contrasts were constructed and tested to examine the difference in mean scores between the HSLP and LSHP readers. Significant differences were not detected (p>.78, p>.61, p>.69 on Vocabulary, Comprehension, and WRAT respectively).

One interaction, Program by Modality, was significant (Multivariate F (9,360) =2.28, p<.05) and was explored further. Referring to univariate tests, this interaction was found to be significant for the Gates Comprehension subtest only.

Further examination of the means of the four WLT levels across the instructional treatments revealed that even though HSHP readers scored higher than all others in both conditions, the degree of their superiority differed across treatments. Specifically, advantage, or highest performance, was observed for those HSHP readers in the sight program. This was the only instance that reading achievement was differentially affected by instructional condition. In all other instances the phonic program produced higher reading achievement scores on all subtests for readers of all WLT proficiency levels. Figure 1 displays this interaction.

No other interactions were significant.

Limitations

This study should be considered with several limitations in mind.

First, the study sample was drawn from middle class, suburban populations and all subjects were white.

An additional limitation was the number of readers within several of the cells of this research design. Also, there was a limited number of readers of the WLT proficiencies of HVLP and LVHP in both instructional treatment groups.

Finally, even though the use of the Houghton Mifflin and Economy programs were well established by Schools 1 and 2 respectively, and even though these materials were used by experienced, first grade teachers, there was no verification that teachers applied the methodologies as established by the program manuals.

Summary and Implications

The major findings of this study may be summarized as follows:

1. The phonic approach studied proved significantly more effective in developing word recognition skills for all beginning readers regardless of prereading WLT proficiency. This advantage, significantly higher achievement for readers in the phonics program was not observed in comprehension performance.
2. HSHP readers were superior to all others in beginning reading performance irrespective of program; LSLP readers were least successful irrespective of program. Readers of mixed proficiencies, HSLP and LSHP, demonstrated equivalent levels of achievement regardless of program and scored between the two extreme groups.
3. Girls demonstrated greater achievement than boys in beginning reading regardless of program or WLT proficiencies.
4. One program by WLT proficiency interaction was detected. This was due to differing results for the highest achievement groups on the comprehension subtest.
5. The efficacy of matching method of instruction to prereading word proficiency level was not supported.

The findings of this study relative to the superiority of the phonic approach to beginning reading instruction support evidence reported previously for first grade readers (Bateman,1968, Bliesmer and Yarborough,

1965). The resulting implication for first grade reading development is that phonics instruction is a beneficial ingredient of successful programs regardless of learner WLT proficiencies. This implication parallels a recurring recommendation for effective beginning reading instruction (Barr, 1984, Anderson et al, 1984). However, considered in light of the lack of significant effects for comprehension performance, it must be stated that phonics instruction enhances only that aspect of the reading program addressing development of word recognition skills.

The main effect for WLT Proficiencies confirms the expectation that those students entering a new task with high levels of task-specific readiness will demonstrate greatest achievement. Likewise, students demonstrating the least success with task-specific readiness will demonstrate least achievement, These were the findings for the HSHP and LSLP levels respectively. The LSLP readers warrant more careful consideration for children of lowest achievement in first grade are the readers who will possibly experience difficulty in subsequent reading instruction. They represent a group that teachers most often strive to understand better in order to help them avoid failure. Although this study precludes more detailed delineation of their WLT proficiencies and reading performance, more careful investigation of their prereading word learning skills is needed. In addition, because the phonics program was more effective with the LSLP readers, more specific instructional recommendations could emerge from a detailed analysis of the specific program strategies.

For the HSLP and LSHP children, achievement between the two extremes (HSHP and LSLP) of a significant amount was observed. The significantly higher achievement of this group over the LSLP readers suggests that a high proficiency on either word learning task contributes in some way to

successful performance in beginning reading and this is true regardless of program of instruction. Again, the phonics program was advantageous for both groups; aptitude-treatment interactions were not observed. This finding, the lack of advantage to adapting method of instruction to WLT strength for the HSLP readers, conforms to findings of previous research of ATI effects with beginning readers (Barr, 1984). Finding insignificant interactive effects when matching readers to program (sight and phonic) on the basis of modality strengths (visual and auditory), Bateman (1968) suggested that learning to read is essentially a sound-symbol process and should be taught to all readers through a phonic approach. The present study does not support this suggestion for children who demonstrate superior prereading proficiency in learning words by both a sight and phonic approach (HSHP); however, for children of the other WLT levels, HSLP, LSHP, and LSLP, a phonic approach appears best for developing word recognition skills.

The one significant interaction revealing differing program effects on the comprehension performance of the most successful readers (HSHP) is of limited implication without more detailed information. If one assumes that these readers had made the greatest advancement in their respective programs and had perhaps reached the point where they were reading more advanced stories, it appears that the instructional strategies in the sight program were of some advantage. This requires verification.

Finally, the significant finding of a gender effect on beginning reading instruction supports previous research conclusions that indicate girls demonstrate greater achievement in beginning reading than boys (Harris & Sipay, 1985). This study suggests that this is true irrespective of instructional program.

Further Research Questions

This study prompts a number of additional research investigations.

First, the WLTs appear a useful, valid procedure for describing a prereader's ability to learn new words in ways specific to the sight and phonic methods of instruction. An advantage of such task-specific preassessment, or readiness, measures is that they offer a rich source of information for individualizing and enhancing instruction (Johnston, 1984). They are diagnostic in nature. Because the teachers involved in this study were not appraised of their students' performance on the WLTs, a question of further study pertains to the effects of instructional programs designed by teachers aware of their students' word learning proficiencies.

A second investigation should address more detailed delineation of the performance by LSLP readers. Clear verification of the development of their skills and description of the elements of the phonics program that benefit them would contribute to enhanced programming.

A third investigation should explore the nature of comprehension instruction. The relative effectiveness of sight and phonic programs on the development of comprehension skills must be explored further.

A fourth investigation should focus on the specific instructional routines applied by the teachers within the sight and phonic programs. Although much can be surmised about these programs from a review of manuals, the critical element remains the teacher. This suggests the need to focus on teachers' behaviors in relation to the respective program strategies and in relation to children's responses to instruction.

Finally, program effects must be examined in ways other than standardized achievement measures. Previous research has established that sight and phonic programs influence children's reading strategies in distinct ways, most evident in oral reading analyses (Barr, 1972). With the WLTs to delineate prereading proficiencies, an investigation of the developing strategies of children of the various levels within the two programs would be of interest. This alternative assessment may yield a clear description of each reader's progress in acquiring reading skill and result in the most pertinent implications for instruction.

TABLE 1

Mean Scores Within Groups

Word Learning Tasks

	Sight WLT	Phonic WLT
School 1	52	39
School 2	50	36
Overall	51	38

TABLE 2

Distribution of Subjects

	Phonic Task				
	School 1		School 2		
Sight Task	High	Low	High	Low	Total
High	43	9	26	8	86
Low	5	43	3	29	80
Total	48	52	29	37	166

TABLE 3

Means and Standard Deviations (in paren.)

for Dependent Measures

Sight Program

	Male				Female			
	HSHP	HSLP	LSHP	LSLP	HSHP	HSLP	LSHP	LSLP
G. Vocab.	42.72 (7.33)	31.60 (9.32)	29.0 (0.0)	25.23 (7.92)	42.12 (5.68)	36.50 (13.48)	39.50 (5.07)	29.85 (10.08)
G. Comp.	28.17 (5.97)	12.40 (7.54)	12.0 (0.0)	12.5 (4.56)	27.64 (5.84)	20.75 (13.77)	20.50 (6.66)	15.77 (6.53)
WRAT	44.78 (6.57)	32.40 (4.45)	29.0 (0.0)	30.43 (4.87)	43.68 (5.96)	38.00 (7.44)	42.50 (11.73)	33.23 (7.43)

Phonic Program

	Male				Female			
	HSHP	HSLP	LSHP	LSLP	HSHP	HSLP	LSHP	LSLP
G. Vocab.	43.14 (4.97)	36.50 (6.36)	42.00 (4.24)	30.88 (12.05)	43.58 (3.60)	44.50 (4.14)	43.0 (0.0)	35.38 (10.04)
G. Comp.	25.14 (7.73)	15.00 (0.00)	24.00 (8.49)	16.31 (7.32)	25.75 (5.36)	26.83 (4.79)	25.0 (0.0)	19.46 (8.23)
WRAT	49.14 (8.60)	41.50 (4.95)	49.50 (4.95)	35.56 (11.09)	53.50 (5.16)	49.33 (7.74)	46.0 (0.0)	42.54 (9.94)

TABLE 4

Observed Combined Means

Program	Vocab.	Comp.	WRAT
Sight	34.58	20.17	37.56
Phonic	38.61	21.80	45.09
Sex			
Male	33.72	18.72	38.06
Female	38.95	23.19	43.37
WLT Prof.			
HSHP	42.74	26.94	46.78
HSLP	37.88	19.77	40.77
LSHP	39.25	20.88	43.00
LSLP	29.15	15.19	34.26

TABLE 5

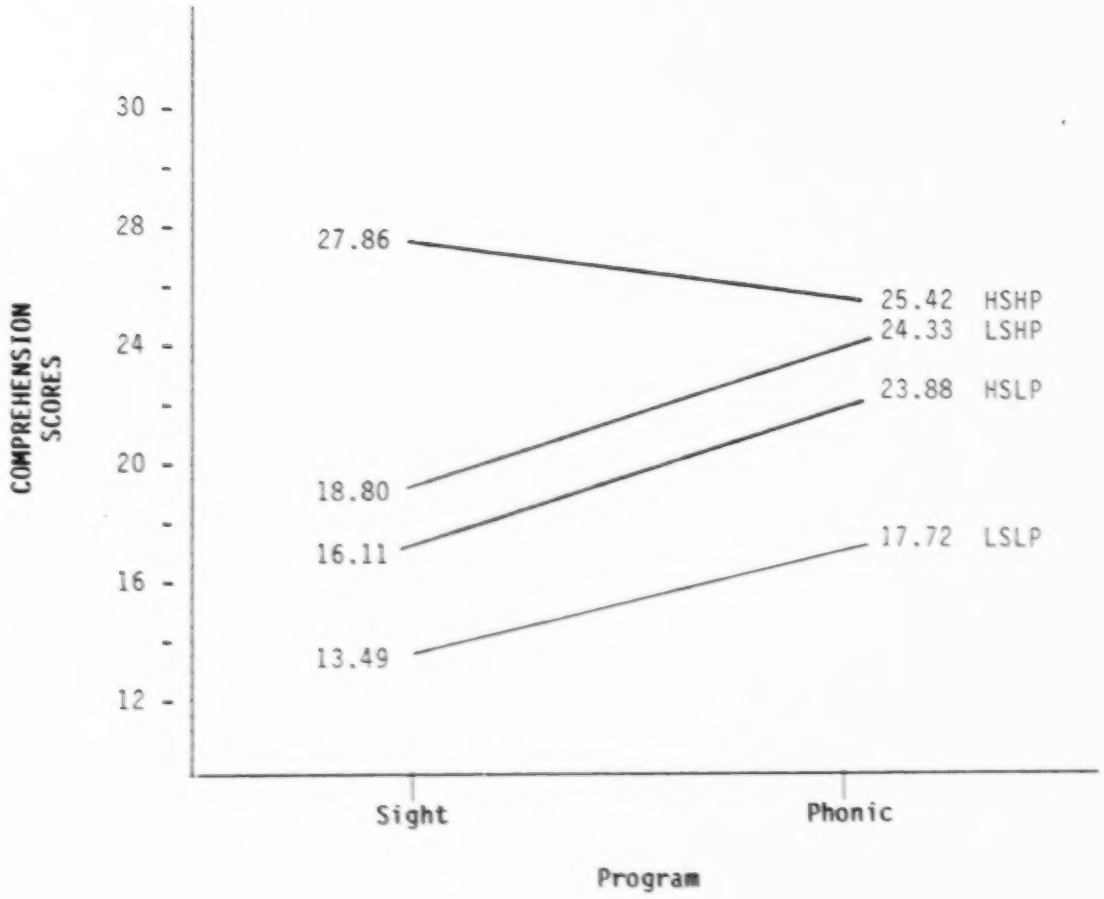
Summary of Analysis of Variance

Source of Variation	df	Multivariate F	Multivariate df	Univariate Tests v	Univariate Tests c	Univariate Tests w
Gr. Mean (M)	1					
Program (A),	1					
eliminating M		20.78**	3,148	9.98*	2.50	41.12**
eliminating M, B, C		21.14**	3,148	10.96**	3.28	43.50**
Sex (B),	1					
eliminating M, A		7.52**	3,148	16.83**	19.19**	19.89**
eliminating M, A, C		2.92*	3,148	5.54*	7.59**	7.83**
WLT Proficiency (C),	3					
eliminating M, A, B		11.84**	9,360	31.01**	34.83**	30.98**
AB,	1					
eliminating M, A, B, C		2.22	3,148	.03	.05	3.03
eliminating M, A, B, C, AC		1.71	3,148	.05	.09	2.57
AC,	3					
eliminating M, A, B, C, AB		2.28*	9,360	1.28	3.78*	.35
BC,	3					
eliminating M, A, B, C, AB, AC		1.14	9,360	1.34	2.56	.93
ABC,	3					
eliminating all else		.55	9,360	.23	.27	1.04
Among Means	16					
Within Groups	150	Univariate Mean Squares:		64.59	42.44	54.84
Total	166					

*p<.05
**p<.01

FIGURE 1

Mean Scores - Comprehension



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